

LISTING OF CLAIMS:

Please consider the claims as follows:

1 1. (previously presented) Apparatus adapted for use in long haul transmission
2 in an optical communication system, comprising:

3 at least one modulator, for modulating an optical phase of pulses within a
4 sequence of return-to-zero (RZ) pulses having a duty cycle of less than or equal to
5 approximately 33% to form an optical phase modulated signal encoded by one of phase
6 shift keying (PSK), differential phase shift keying (DPSK) or quadrature phase shift
7 keying (QPSK) in accordance with an input digital data stream;

8 a wavelength division multiplexer adapted to combine an output signal of said at
9 least one modulator with other optical phase modulated signals having optical carriers
10 with different wavelengths;

11 a dispersion managed optical transmission medium for transmitting an output
12 wavelength division multiplexed signal of said wavelength division multiplexer; and

13 a means for transmitting the wavelength division multiplexed signal in the
14 dispersion managed optical transmission medium.

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2-9. (canceled)

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1 10. (previously presented) The invention defined in claim 1 wherein said at
2 least one modulator is a LiNbO₃ phase modulator.

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1 11. (previously presented) The invention defined in claim 1 wherein said at
2 least one modulator is a LiNbO₃ Mach-Zehnder phase modulator.

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1 12. (previously presented) The invention defined in claim 1 wherein said
2 apparatus further comprises at least one receiver including a delay demodulator for
3 receiving said input digital data stream from the dispersion managed optical transmission
4 medium.

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1 13. (previously presented) The invention defined in claim 1 wherein said
2 apparatus further comprises a receiver including at least one balanced receiver for
3 recovering said input digital data stream from a transmitted wavelength division
4 multiplexed signal.

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14. (canceled)

1 15. (previously presented) The invention defined in claim 1 wherein said
2 transmission medium includes discrete or distributed means of erbium-doped fiber
3 amplification (EDFA) or Raman amplification.

1 16. (previously presented) A method of transmission for long haul optical
2 communications, comprising the steps of:

3 modulating an optical carrier signal in a sequence of return-to-zero (RZ) pulses
4 having a duty cycle of less than or equal to approximately 33%;

5 modulating an optical phase of said pulses in accordance with an input digital data
6 stream to form an optical phase modulated signal via one of phase shift keying (PSK),
7 differential phase shift keying (DPSK) or quadrature phase shift keying (QPSK);

8 combining said optical phase modulated signal with other optical phase
9 modulated signals having optical carriers with different wavelengths to form a
10 wavelength division multiplexed signal; and

11 transmitting said wavelength division multiplexed signal in a dispersion managed
12 optical transmission medium.

17-20. (canceled)

1 21. (previously presented) The method of claim 16, wherein dispersion
2 management is provided by applying pre-dispersion compensation and post-dispersion
3 compensation to said wavelength division multiplexed signal.

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1 22. (previously presented) The method of claim 16, wherein dispersion
2 management is provided by soliton transmission of said wavelength division multiplexed
3 signal.

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1 23. (previously presented) The method of claim 22, wherein the dispersion
2 managed optical transmission medium comprises a plurality of serially interconnected
3 fibers arranged such that adjacent interconnected fibers have alternating and opposite
4 dispersion characteristics.

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1 24. (previously presented) The method of claim 16, wherein the dispersion
2 managed optical transmission medium comprises one or more optical fibers exhibiting a
3 high chromatic dispersion.

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1 25. (previously presented) The apparatus of claim 1, wherein dispersion
2 management is provided by applying pre-dispersion compensation and post-dispersion
3 compensation to said wavelength division multiplexed signal.

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1 26. (previously presented) The apparatus of claim 1, wherein dispersion
2 management is provided by soliton transmission of said wavelength division multiplexed
3 signal.

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1 27. (previously presented) The apparatus of claim 26, wherein the dispersion
2 managed optical transmission medium further comprises a plurality of serially
3 interconnected fibers arranged such that adjacent interconnected fibers have alternating
4 and opposite dispersion characteristics.

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1 28. (previously presented) The method of claim 11, wherein the dispersion
2 managed optical transmission medium comprises one or more optical fibers exhibiting a
3 high chromatic dispersion.